

REMARKS

Claims 1, 2, 4-9 and 11- 17 are all the claims pending in the application.

I. The Rejection Based on Tzou

Claims 9-17 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Tzou.

Applicants respectfully submit that the present invention is not anticipated by or obvious over Tzou and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

Claim 9 is amended to include the subject matter of original claim 10. That is, claim 9 is amended to recite that the resin (B') is a resin containing a repeating unit shown by formula (a'). The polymer of Tzou is a novolak resin-based polymer. Distinct from novolak resin-based polymers, the polymer of the present invention is a vinylphenol-based polymer. Applicants respectfully submit that Tzou does not teach or disclose a negative-working resist composition for electron beams or X-rays comprising (A) a compound generating an acid and/or radical species by the irradiation of electron beams or X-rays, (B') a resin having at least one unsaturated bond polymerizable by an acid and/or an alkali, which is insoluble in water but soluble in an alkali aqueous solution, and containing a repeating unit of formula (a'), and (C) a crosslinking agent causing crosslinking with the resin (B') by the action of an acid.

For the above reasons, it is respectfully submitted that the subject matter of claims 9 and 11-17 is neither taught by nor made obvious from the disclosures of Tzou and it is requested that the rejection under 35 U.S.C. §102 be reconsidered and withdrawn.

II. The Rejection Based on Sakurai et al¹

Claims 1-8 are rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Sakurai et al '415.

Applicants respectfully submit that the present invention is not anticipated by or obvious over Sakurai et al '415 and request that the Examiner reconsider and withdraw this rejection in view of the following remarks.

Claim 1 is amended to distinguish the disclosures of Sakurai et al '415 by including the subject matter of claim 3.

Further, Sakurai et al '415 relates to a radiation sensitive negative composition for a color filter. Sakurai et al '415 discloses that the radiation sensitive negative composition having developability and adhesion to a substrate could be obtained by using an epoxy compound or melamine compound as a

¹ The Examiner listed Sakurai et al '774 and Sakurai et al '415 on the PTO Form 892. From the Examiner's citation of column and line numbers, it appears that the Examiner is using Sakurai et al '415 in the rejection. Applicants' comments herein relate to Sakurai et al '415.

crosslinking agent. However, by the use of Applicants' claimed invention, sensitivity, resolving power and profile in a resist are unexpectedly improved by the combination of claimed components and a crosslinking agent. Sakurai et al '415 does not disclose that sensitivity, resolving power and profile in a resist may be improved by using a crosslinking agent with the other claimed components as is achieved by Applicants' claimed negative-working resist composition.

For the above reasons, it is respectfully submitted that the subject matter of claims 1, 2 and 4-8 is neither taught by nor made obvious from the disclosures of Sakurai et al '415 and it is requested that the rejection under 35 U.S.C. §103(a) be reconsidered and withdrawn.

III. Conclusion

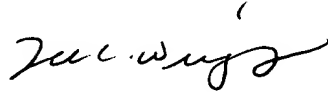
In view of the above, Applicants respectfully submit that their claimed invention is allowable and ask that the rejections under 35 U.S.C. §102 and §103 be reconsidered and withdrawn. Applicants respectfully submit that this case is in condition for allowance and allowance is respectfully solicited.

If any points remain at issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the local exchange number listed below.

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Applicants hereby petition for any extension of time which may be required to maintain the pendency of this case. The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,



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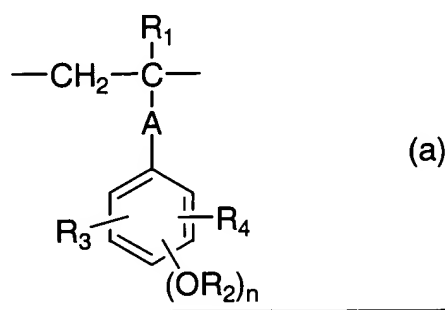
APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

Claims 3 and 10 are canceled.

The claims are amended as follows:

1 (amended). A negative-working resist composition for electron beams or X-rays comprising (A) a compound generating an acid and/or radical species by the irradiation of electron beams or X-rays, (B) a resin which is insoluble in water and soluble in an alkali aqueous solution and having a repeating unit shown by the following formula (a), (C) a crosslinking agent causing crosslinking with the resin of component (B) by the action of an acid, and (D) a compound having at least one unsaturated bond capable of being polymerized by an acid and/or a radical,



wherein R₁ represents a hydrogen atom, a halogen atom, a cyano group, or an alkyl or haloalkyl group which may have a substituent; R₂ represents a hydrogen atom, or an alkyl, cycloalkyl, aryl, aralkyl, or acyl group which may have a substituent; R₃ and R₄, which may be the same or different, each represents a hydrogen atom, a

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halogen atom, a cyano group, or an alkyl, cycloalkyl, alkenyl, aralkyl, or aryl group which may have a substituent; A represents a single bond, or a divalent alkylene, alkenylene, cycloalkylene, or arylene group which may have a substituent, or -O-, -SO₂-, -O-CO-R₅-, -CO-O-R₆-, or -CO-N(R₇)-R₈-; R₅, R₆, and R₈, which may be the same or different, each represents a single bond, or an alkylene, alkenylene, cycloalkylene, or arylene group, which may have a substituent, singly or a divalent group formed by combining the above-described group and at least one kind selected from an ether structure, an ester structure, an amide structure, a urethane structure, and a ureido structure; R₇ represents a hydrogen atom, or an alkyl, cycloalkyl, aralkyl, or aryl group which may have a substituent; and n represents an integer of from 1 to 3; provided that plural R₂s, or R₂ and R₃ or R₄ may combine with each other to form a ring.

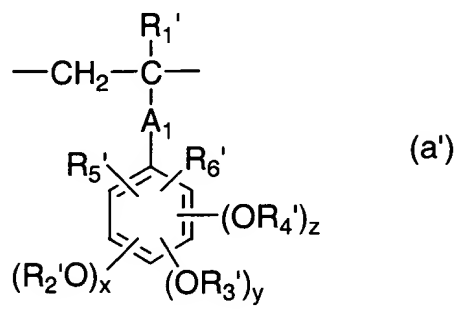
9 (amended). A negative-working resist composition for electron beams or X-rays comprising

(A) a compound generating an acid and/or radical species by the irradiation of electron beams or X-rays,

(B') a resin having at least one unsaturated bond polymerizable by an acid and/or an alkali, which is insoluble in water but soluble in an alkali aqueous solution, and containing a repeating unit shown by the following formula (a'), and

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(C) a crosslinking agent causing crosslinking with the resin (B') by the action of an acid;

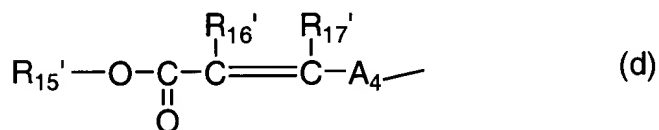
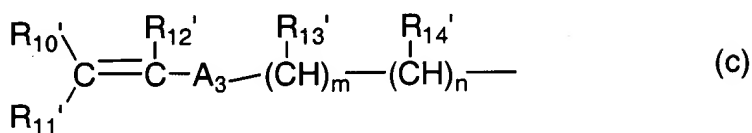
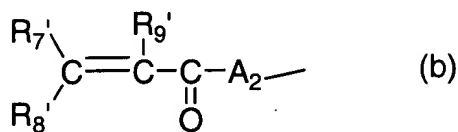


wherein R₁' represents a hydrogen atom, a cyano group, or an alkyl or haloalkyl group which may have a substituent;

R₂' to R₄' each represents a hydrogen atom, a group shown by the formula (b), (c), or (d) described below, or an alkyl, cycloalkyl, aryl, aralkyl, or acyl group which may have a substituent; and

R₅' and R₆', which may be the same or different, each represents a hydrogen atom, a hydroxyl group, a halogen atom, a cyano group, or an alkyl, cycloalkyl, alkenyl, aralkyl, or aryl group which may have a substituent;

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wherein R_7' to R_{12}' , R_{16}' , and R_{17}' each represents a hydrogen atom, a halogen atom, a cyano group, or an alkyl or haloalkyl group which may have a substituent;

R_{13}' and R_{14}' each represents a hydrogen atom, a halogen atom, a hydroxy group, or an alkyl, alkoxy, or acyloxy group which may have a substituent;

R_{15}' represents a hydrogen atom or an alkyl, cycloalkyl, aralkyl, or aryl group which may have a substituent;

A_1 represents a single bond, or a divalent alkylene, alkenylene, cycloalkylene, or arylene group which may have a substituent, or $-O-$, $-SO_2-$, $-O-CO-R_{20}'$, $-CO-O-R_{21}'$, or $-CO-N(R_{22}')-R_{23}'$;

R_{20}' , R_{21}' , and R_{23}' , which may be the same or different, each represents a single bond, or a divalent alkylene, alkenylene, cycloalkylene, or arylene group which may

have an ether structure, an ester structure, an amide structure, a urethane structure, or a ureido structure or may have a substituent;

R₂₂' represents a hydrogen atom, or an alkyl, cycloalkyl, aralkyl, or aryl group which may have a substituent;

A₂ represents a single bond, -O-R₂₁'-, or -N(R₂₂')-R₂₃'-;

A₃ represents a single bond, -SO₂-, or an arylene group which may have an alkylene structure or may have a substituent;

A₄ represents a single bond, a divalent alkylene, cycloalkylene, or arylene group which may have a substituent, or -O-, -SO₂-, -CO-, or -CO-O-R₂₁'-;

x, y, and z in the formula (a') each represents 0 or 1 and m and n in the formula (c) each represents 0 or an integer of at least 1, provided that in the formula (a'), at least one repeating unit has the group of the formula (b), (c), or (d); and two of R₂' to R₄', or one of R₂' to R₄' and R₅' or R₆' may combine with each other to form a ring.